LITTLE CREEK RESERVOIR

Introduction

Little Creek Reservoir is an intermediate size reservoir on the east slopes of the Monte Cristo Range south of Bear Lake. It was created in 1929 by the construction of an earth-fill dam on Little Creek. The reservoir shoreline is mostly privately owned. However, the first 1/4 mile of shoreline to the right of the dam (looking upstream) and the first 1/8 mile to the left are owned by the BLM. Public access is unrestricted. Reservoir water is used primarily for irrigation, and the reservoir is typically drained every summer. There are no foreseeable changes in water usage at this time.

Characteristics and Morphometry

Lake elevation (meters / feet)	1,948 / 6,393
Surface area (hectares / acres)	26.3 / 65
Watershed area (hectares / acres)	8,288 / 20,480
Volume (m^3 / acre-feet)	
capacity	1,366,720 / 1,108
conservation pool	
Annual inflow (m^3 / acre-feet)	
Retention time (years)	
Drawdown (m^3 / acre-feet)	1,366,720 / 1,108
Depth (meters / feet)	
maximum	5.18 / 17
mean	3.05 / 10
Length (meters / feet)	643 / 2,109
Width (meters / feet)	571.4 / 1,875
Shoreline (km / miles)	2.3 / 1.43

Location

County	Rich
Longitude / Latitude	111 13 48 / 41 41 34
USGS Map	Randolph 1968
DeLorme's Utah Atlas & Gazetteer™	Page 61,A-6
Cataloging Unit	Upper Bear (16010101)

Recreation

Little Creek Reservoir is easily accessible from the town of Randolph. From downtown, go west up the canyon for about two miles.

Due to the annual draining of the reservoir, it only receives recreational use in the spring and early summer.

Fishing is the primary recreational use of the reservoir, as it

is stocked with catchable rainbow trout every spring.

File Contains Data for PostScript Printers Only

There are privies at the south end of the dam, but no other recreational facilities are available. Although, there is no improved boat ramp, it is possible to launch small boats on the south shore near the dam. It should be noted that by late summer the reservoir is usually completely dry and the area is not notably scenic.

The nearest campground is at Rendezvous Beach on the south shore of Bear Lake.

Watershed Description

The two primary tributary drainages, Old Canyon and New Canyon reach to the ridgeline of the Monte Cristo Range, defining a rectangular watershed between the ridgeline and the reservoir. The underlying bedrock is recent (Tertiary) deposits. The area is forested at upper elevations and on north facing slopes, with sage-grass areas at lower elevations and on south facing slopes. The area around the reservoir is rolling hills of sagebrush.

The watershed high point is 2,542 m (8,340 ft) above sea level, thereby developing a complex slope of 4% to the reservoir. The average stream gradient of Little Creek is 4% (216 feet per mile) The inflow and outflow is Little Creek.

The watershed is made up of gentle mountains. The soil is derived from the Wasatch Formation, the limestone bedrock that underlies much of the watershed. The soil associations that compose the watershed are listed in Appendix III.

The vegetation communities consist of spruce-fir, pine, aspen, oak-maple, and sagebrush-grass. The watershed receives 30-64 cm (12-25 inches) of precipitation annually. The frost-free season around the reservoir is 80 - 100 days per year.

Land use in the watershed is multiple use (81%), native grazing (16%), and irrigated pasture/haylands (3%). Minor recreational use takes place.

Limnological Assessment

The water quality of Little Creek Reservoir is very good. It is considered to be hard with a hardness concentration value of approximately 224 mg/L (CaCO3). The only parameter that has exceeded State water quality standards for defined beneficial uses is phosphorus. The average concentration of total phosphorus in the water column only exceeded the criteria in 1989 with a concentration of 27.0 ug/L which slightly exceeds the recommended pollution indicator for phosphorus of 25 ug/L. The phosphorus concentration on August 16, 1989 averaged 51.5 ug/L. This increased concentration occurred late in the summer under low volume conditions. The reservoir is characterized as a nitrogen phosphorus limited system with TSI values indicating the reservoir is mesotrophic. The reservoir does not stratify due to the shallow conditions.

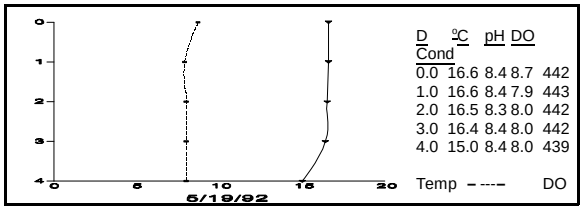
According to DWR no fish kills have been reported in recent years but problems may arise due to the shallowness of the reservoir late in the summer. The lake has not been treated for rough fish competition, so populations of native fishes may still be present in the lake. The reservoir is primarily managed for rainbow trout (*Oncorhynchus mykiss*). This reservoir is managed as a put and take fishery and DWR typically stocks the reservoir with 10,000 catchable rainbow trout each year. No agreement exists between the irrigation company and the Division of Wildlife Resources concerning a conservation pool and the reservoir is drained annually.

Limnological Data

Data sampled from STORET site: 590651

Surface Data	1981*	1989	1991*	1992*
Trophic Status	M	M	O	M
Chlorophyll TSI	-	39.39	33.90	37.88
Secchi Depth TSI	44.7	43.70	38.65	44.17
Phosphorous TSI	47.3	52.32	39.97	47.34
Average TSI	46	45.14	37.51	43.13
Chlorophyll a (ug/L)	-	2.5	1.4	2.1
Transparency (m)	2.9	3.1	4.4	3.0
Total Phosphorous (mg/L)	10.0	28.0	12.0	20.0
pH	8.5	9.2	8.5	8.4
Total Susp. Solids (mg/L)	<5	-	-	<3
Total Volatile Solids (mg/L)	-	-	6	2
Total Residual Solids (mg/L)	-	-	<0.1	<3
Temperature (°C / °f)	19/66	18/64	19/65	17/62
Conductivity (umhos.cm)	410	329	460	442
Water Column Data				
Ammonia (mg/L)	0.05	0.03	0.03	0.03
Nitrate/Nitrite (mg/L)	0.10	0.01	0.01	0.01
Hardness (mg/L)	212	-	236	224
Alkalinity (mg/L)	209	-	220	214
Silica (mg/L)	-	-	9.0	9.0
Total Phosphorus (ug/L)	10.0	27.0	13.0	21.0
Miscellaneous Data				
Limiting Nutrient	P	N	N	N
DO (Mg/l) at 75% depth	8.2	9.0	12.0	8.2
Stratification (m)	NO	NO	NO	NO
Depth at Deepest Site (m)	5	2.0	4.4	4.0

* Period 1 Data Only



Fishing is supported primarily by local residents.

DWR reported in 1980 that invertebrates present included gammarus and leeches and the zooplankton community included *Daphnia, Cyclops, Nauplii, and Turbellarianii*. The reservoir has extensive macrophyte coverage with pondweed as the dominant macrophyte.

Phytoplankton in the euphotic zone from August 3, 1994 include the following taxa (in order of dominance)

Species	Cell Volume (mm^3/liter)	% Density By Volume
Pennate diatoms	0.552	44.14
Fragilaria crotonensis	0.334	26.69
Anabaena sp.	0.278	22.24
Centric diatoms	0.078	6.23
Ankistrodesmus falcatus	0.009	0.70
Total	1.251	
Shannon-Weaver [H']	1.26	
Species Evenness	0.78	
Species Richness	0.20	

The phytoplankton community is dominated by the presence of diatoms and blue-green algae .

Pollution Assessment

Nonpoint pollution sources include the following: grazing, recreation, and agriculture.

There are no point sources of pollution in the watershed.

Beneficial Use Classification

The state beneficial use classifications include: boating and similar recreation (excluding swimming) (2B), cold water game fish and organisms in their food chain (3A) and agricultural uses (4).

Information

Management Agencies	
Bear River Association of Governments	752-7242
Division of Wildlife Resources	538-4700
Division of Water Quality	538-6146
Bureau of Land Management	539-4001
Bear River Resource Area	977-4300
Recreation	
Bridgerland Travel Region (Logan)	657-5353
Garden City Chamber of Commerce	946-2901
Reservoir Administrators	
Little Creek Irrigation Company	793-6655